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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,834

07/12/2006

Patrick Le Bot

Serie 6485

7769

40582

7590

12/28/2009

AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

PETTITT, JOHN F

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

12/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,834	Applicant(s) LE BOT, PATRICK	
	Examiner John F. Pettitt	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. As stated in the office action dated 04/28/2009, claim 12 is drawn to a non-elected species and is therefore withdrawn. Therefore, the applicant required to identify it as such.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grenier et al. (US 5,475,980) hereafter Grenier (980) in view of Grenier (US 5,735,142) hereafter Grenier (142). Grenier (980) teaches a process (Fig. 4) for separating air by cryogenic distillation in an installation comprising a double air separation column (1), of which one medium-pressure column (2) operates at a medium pressure, and an exchange line (4) in which: a) air is raised to a high pressure (not shown - column 6,

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lines 6), wherein said high pressure is at least 5 bar above the medium pressure (of 2); b) one portion (all air entering 4 on left of Fig. 4) of the air is cooled in the exchange line (4) and is then divided into two fractions (that which exits 4 to 8 and 32 hereafter "8a" for stream entering 8 and "32a" for stream entering 32); c) each fraction (8a, 32a) is expanded in a turbine (8, 32); d) intake pressures of the two turbines (8, 32) are at least 5 bar above the medium pressure (column 6, lines 5-20); e) a delivery pressure (exit pressure) of at least one of the two turbines (8, 32) is substantially equal to the medium pressure (column 6, lines 21-22); f) at least one portion of the air expanded in at least one of the turbines (8, 32) is sent to the medium-pressure column (2) of the double column (1); g) a cold booster (7) mechanically coupled to one of the expansion turbines (8) takes in air, which has undergone cooling in the exchange line (4), and delivers the air at a temperature above an intake temperature of at least one of the turbines (32; delivers the air to exchange line 4), and the air delivered by the cold booster (7) is reintroduced into the exchange line (4) in which at least one portion of the delivered air undergoes pseudo-condensation (interpreted as at least partial condensation; column 6, lines 5-10); h) at least one pressurized liquid (O₂) coming from one of the columns (of 1) undergoes pseudo-vaporization (at least partial vaporization) in the exchange line (4) at a vaporization temperature (column 1, lines 60-65), and i) the turbine (32) not coupled to the cold booster (7) is coupled to a booster (33) followed by a cooler (4); and, j) an intake temperature of the cold booster (7) is close to the vaporization temperature of the liquid (O₂; since the intake to the cold booster 7 comes from the heat exchange line 4; column 4, lines 30-35).

Grenier (980) does not explicitly teach that the high pressure air is purified or a mixing column in which air from at least one of the turbines is sent. However, purifying an air stream prior to cryogenic treatment is standard practice in air distillation, further providing a further column in which mixing may occur is also standard practice for the purpose of separating further components such as argon. Such is taught by Grenier (142), who teaches that pressurized air is purified in apparatus (5; column 2, lines 44-45) and further teaches that an additional column (31) is provided, in which mixing occurs (inherent to disclosed column operation) and Argon is separated (column 4, line 63 - column 5, line 5). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the process of Grenier (980) with the purifier (5) and column (31) of Grenier (142) for the purpose of preparing air for cryogenic treatment to ensure reliability in the installation and for the purpose of separating argon for sale or use. Thus, the air sent to at least one (8) of the turbines (8, 32) upstream of the mixing column (31 of Grenier (142)) comes from the booster (33) and leaves the booster (33) at a pressure above the high pressure (column 6, line 6). Additionally, air expanded in at least one of the turbines (8, 32) is sent to the bottom of the mixing column (31-Grenier(142)), in order to participate in mass exchange therein (inherent to air sent to column 31 as disclosed).

4. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mostello (US 5,379,598) hereafter Mostello in view of Grenier (142). Mostello teaches a process for separating air by cryogenic distillation in an installation (Fig. 1) comprising a

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double air separation column (62), of which one medium-pressure column (64) operates at a medium pressure, and an exchange line (24, 22, 52, 14) in which: a) air is raised to a high pressure (via 12 or 18), wherein said high pressure is at least 5 bar above the medium pressure (of 64), and purified (via 16); b) one portion of the stream of purified air is cooled in the exchange line (24, 22, 52, 14) and is then divided into two fractions (54, 32); c) each fraction (54, 32) is expanded in a turbine (56, 38); d) intake pressures of the two turbines (56, 38) are at least 5 bar above the medium pressure (column 9, lines 5-30); e) a delivery pressure of at least one (38) of the two turbines (56, 38) is substantially equal to the medium pressure; f) at least one portion of the air expanded in at least one (38) of the turbines is sent to the medium-pressure column (64) of the double column (62); g) a cold booster (34) mechanically coupled to one (38) of the expansion turbines (56, 38) takes in air, which has undergone cooling in the exchange line (24), and delivers the air at a temperature above an intake temperature of at least one (56) of the turbines (56, 38), and the air delivered by the cold booster (34) is reintroduced into the exchange line (24) in which at least one portion of the delivered air undergoes pseudo-condensation (at least partial condensation, column 7, lines 40-45); h) at least one pressurized liquid (O₂) coming from one of the columns (of 62) undergoes pseudo-vaporization (at least partial vaporization) in the exchange line (24) at a vaporization temperature (column 8, lines 45-50), and i) the turbine (56) not coupled to the cold booster (34) is coupled to a booster (50) followed by a cooler (52); and, j) an intake temperature of the cold booster is close to the vaporization

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temperature of the liquid (O₂; see Figures 2-3; column 7, lines 1-10; "close" relative term not distinguishable in any absolute sense),

Mostello does not explicitly teach a mixing column in which air from at least one of the turbines is sent. However, providing a further column in which air is sent (and in which mixing may occur) is standard practice for the purpose of separating further components such as argon. Such is taught by Grenier (142), who teaches that an additional column (31) is provided, in which mixing occurs (inherent to disclosed column operation) and Argon is separated (column 4, line 63 - column 5, line 5). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the process of Mostello with the column (31) of Grenier (142) for the purpose of preparing air for cryogenic treatment to ensure reliability in the installation and for the purpose of separating argon for sale or use. Thus, the air sent to at least one (56) of the turbines (38, 56) upstream of the mixing column (31 of Grenier (142)) comes from the booster (50) and leaves the booster (50) at a pressure above the high pressure (from 12 or 18). Additionally, air expanded in at least one of the turbines (56, 38) is sent to the bottom of the mixing column (31-Grenier(142)), in order to participate in mass exchange therein (inherent to air sent to column 31 as disclosed).

Response to Arguments

5. Applicant's arguments filed 08/28/2009 have been fully considered but they are not persuasive.

1. Applicant's arguments (page 6-7) are that Kunz does not explicitly teach that the temperature of the stream leaving the cold compressor is at a temperature above an

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intake temperature of at least one of the turbines. In response to the applicant's arguments, the examiner agrees that there does not appear to be sufficient evidence in Kunz for this limitation, therefore the rejection is withdrawn.

2. Applicant's arguments (page 8) are that some other patent applications that defined "mixing column" as "a countercurrent contact column in which a more easily volatile gas is sent opposite a more poorly volatile liquid" and that therefore the broadest reasonable interpretation of "mixing column" employed by the rejection (a column in which mixing may occur) is not correct. In response to the applicant's arguments, the examiner fully disagrees as the interpretation of rejection is reasonable and in construing the claims the broadest reasonable interpretation must be made. Therefore, an argument that a more specific definition is possible does not show that the interpretation used is improper. Further, such language as "mixing" in the context of the gas processing art, is clearly generic and the redefinition of the term in another patent application is not evidence that the term is unambiguously understood to have such a narrow meaning by those in the art; rather such is clear evidence that such a definition is decidedly more narrow than widely understood meaning. Lastly, it is noted that the applicant must rely on the content of the specification of this application in order to be his own lexicographer. Therefore, the interpretation of the rejection is proper and the argument is unpersuasive.

Conclusion

6. Applicant's amendment necessitated any of the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art
Unit 3744

JFP III
December 17, 2009